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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/757,990	01/10/2001	Alexander Vaisburd	037/01748	8519

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EXAMINER

TABATABAI, ABOLFAZL

ART UNIT PAPER NUMBER

2625

DATE MAILED: 07/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/757,990

Applicant(s)

VAISBURD ET AL.

Examiner

Abolfazl Tabatabai

Art Unit

2625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 26 is/are allowed.
- 6) ☒ Claim(s) 1-3, 6-24, 27 and 28 is/are rejected.
- 7) ☒ Claim(s) 4, 5, 9 and 25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Response to Amendment/Arguments

1. Applicant's arguments, (page 8 and 9), filed on October 20, with respect to the rejection(s) of claim(s) 1-25 under SITO et al (U S 5,583,903) in view of Haas (U S 4,357,535) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Ozaki (U S 5,995,581) and Hardy et al (U S 6,011,828).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 2625

3. Claims 1-3, 6, 8, 10 and 14-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ozaki (U S 5,995,581) and Hardy et al (U S 6,011,828).

Regarding claim 1, Ozaki discloses CR image-based positioning for X-ray CT scan comprising:

(a) acquiring an image of a slice subject at an imaging position (see Column 2, lines 21-25 and 47-53).

However, Ozaki is silent about specific details regarding the step of:

(b) determining said sag of said support element at said imaging position. In the same field (computed tomography) of endeavor, however, Hardy discloses laser-measuring apparatus for radio surgery/ stereotactic radiotherapy alignment comprising:

(b) determining said sag of said support element at said imaging position (column 4, lines 42-48).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the step of determining said sag of said support element at said imaging position as taught by Hardy in the system of Ozaki because Hardy provides Ozaki a system which useful for reducing and/or eliminating errors in stereotactic positioning and localizing due to couch or gantry sag, or rotation by directly measuring the isocenter's position relative to a fixed laser measuring source mounted on the Linac gantry.

Regarding claim 2, Ozaki is silent about specific details regarding the step of adjusting said image to compensate for said determined sag.

Art Unit: 2625

In the same field (computed tomography) of endeavor, however, Hardy discloses laser measuring apparatus for radio surgery/ stereotactic radiotherapy alignment comprising the step of adjusting said image to compensate for said determined sag (column 4, lines 56-60 and column 5, lines 39-46).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the step of adjusting said image to compensate for said determined sag as taught by Hardy in the system of Ozaki because Hardy provides Ozaki a system which useful for reducing and/or eliminating errors in stereotactic positioning and localizing due to couch or gantry sag, or rotation by directly measuring the isocenter's position relative to a fixed laser measuring source mounted on the Linac gantry.

Regarding claim 3, Ozaki is silent about specific details regarding the step of acquired image is used for determining said sag.

In the same field (computed tomography) of endeavor, however, Hardy discloses laser measuring apparatus for radio surgery/ stereotactic radiotherapy alignment comprising the step of acquired image is used for determining said sag (column 10 lines 12-15).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the step of determining said sag of said support element at said imaging position as taught by Hardy in the system of Ozaki because Hardy provides Ozaki a system which useful for reducing and/or eliminating errors in stereotactic positioning and localizing due to couch or gantry

Art Unit: 2625

sag, or rotation by directly measuring the isocenter's position relative to a fixed laser measuring source mounted on the Linac gantry.

Regarding claim 6, Ozaki discloses CR image-based positioning for X-ray CT scan comprising the step of acquired image is a CT image (column 2, lines 21-25).

Claim 8, is similarly analyzed as claim 1 above.

Claim 10, is similarly analyzed as claim 2 above.

Regarding claim 12, Ozaki discloses CR image-based positioning for X-ray CT scan comprising:

(a) acquiring at least one image of said slice at an imaging position (see column 2, lines 47-53);

(b) acquiring another image of said slice at a different imaging position (see column 2, lines 47-53).

However, Ozaki is silent about specific details regarding the steps of:

(c) determining said sag of said support element at said imaging position.

(d) aligning said acquired images based on the determined sag.

In the same field (computed tomography) of endeavor, however, Hardy discloses laser measuring apparatus for radio surgery/ stereotactic radiotherapy alignment comprising:

(c) determining said sag of said support element at said imaging position (column 4, lines 25-37).

(d) aligning said acquired images based on the determined sag (column 4, lines 25-37).

Art Unit: 2625

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the step of determining said sag of said support element at said imaging position as taught by Hardy in the system of Ozaki because Hardy provides Ozaki a system which useful for reducing and/or eliminating errors in stereotactic positioning and localizing due to couch or gantry sag, or rotation by directly measuring the isocenter's position relative to a fixed laser measuring source mounted on the Linac gantry.

Claims 14 and 15 are similarly analyzed as claim 6 above.

Claims 16 and 17 are similarly analyzed as claim 12 above.

Regarding claim 18, Ozaki is silent about specific details wherein said sag at one of the imaging position is assumed to be zero.

In the same field (computed tomography) of endeavor, however, Hardy discloses laser measuring apparatus for radio surgery/ stereotactic radiotherapy alignment wherein said sag at one of the imaging position is assumed to be zero (column 5, lines 62-67).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the step of determining said sag at one of the imaging position is assumed to be zero as taught by Hardy in the system of Ozaki because Hardy provides Ozaki a system which useful for reducing and/or eliminating errors in stereotactic positioning and localizing due to couch or gantry sag, or rotation by directly measuring the isocenter's position relative to a fixed laser measuring source mounted on the Linac gantry.

Art Unit: 2625

Regarding claim 19, Ozaki is silent about specific details wherein the determination of said sag of said slice at one imaging position is performed by calculation based on said sag of said supporting element determined at another imaging position.

In the same field (computed tomography) of endeavor, however, Hardy discloses laser measuring apparatus for radio surgery/ stereotactic radiotherapy alignment the determination of said sag of said slice at one imaging position is performed by calculation based on said sag of said supporting element determined at another imaging position (column 5, lines 38-46).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the step of the determination of said sag of said slice at one imaging position is performed by calculation based on said sag of said supporting element determined at another imaging position as taught by Hardy in the system of Ozaki because Hardy provides Ozaki a system which useful for reducing and/or eliminating errors in stereotactic positioning and localizing due to couch or gantry sag, or rotation by directly measuring the isocenter's position relative to a fixed laser measuring source mounted on the Linac gantry.

Claims 20 and 21 are similarly analyzed as claim 2 above.

Claim 22, is similarly analyzed as claim 6 above.

4. Claims 7, 11, 13, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ozaki (U S 5,995,581) and Hardy et al (U S 6,011,828) as applied to claims 1 and 12 and further in view of Liu et al (U S 6,505,064 B1).

Art Unit: 2625

Regarding claim 7, Ozaki and Hardy are silent about the method, which said acquired image is an NM image.

In the same field of endeavor, however, Liu discloses diagnostic imaging system comprising acquired image is an NM image (column 4, lines 22-28).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the step of determining said sag of said support element at said imaging position as taught by Liu in the system of Ozaki because Liu provides Ozaki a system that improves accuracy in depicting blood vessel lumen of imaged blood vessels, it captures blood flow time variations in vivo and also compensates for the dynamics of the blood vessel.

Claims 11,13, 23 and 24 are similarly analyzed as claim 7 above.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 27 is rejected under 35 U.S.C. 102(b) as being anticipated by Hardy et al (U S 6,011,828).

Regarding claim 27, Hardy discloses a method for the correction of the effects of different sags of a supporting element on more than one image of one slice of a subject, comprising:

(a) the accumulation of data from a plurality of various measurements of

Art Unit: 2625

sag in a plurality of various situations (column 4, lines 42-47).

(b) the utilization of said accumulated data to estimate the sag of a slice of a subject in a particular situation (column 4, lines 38-48).

7. Claim 28, is rejected under 35 U.S.C. 103(a) as being unpatentable over Hardy et al (U S 6,011,828) in view of Ozaki (U S 5,995,581).

Regarding claim 28, Hardy discloses a method for the correction of the effects of variable sag of a supporting element of a support system on an image of a subject, comprising:

(a) measuring the sag of the support element at a plurality of positions and under a plurality of controlled loads (column 4, lines 42-47);

(d) adjusting an image taken of said subject at said imaging position to compensate for the estimated sag (column 4, lines 42-47 and column 5, lines 63-67).

(c) estimating the sag at an imaging position and under the load of a subject using said stored sag measurements (column 4, lines 38-48).

However, Hardy is silent about the specific details regarding storing these sag measurements.

In the same (computed tomography field of endeavor, however, Ozaki discloses CR image-based positioning for X-ray CT scan comprising:

(b) storing these sag measurements (column 2, lines 63-67).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the steps of storing these sag measurements as taught by Ozaki in the system of Hardy because Ozaki provides Hardy a system

Art Unit: 2625

which enable ready and accurate determination of slice positions to be scanned by an x-ray CT scanner while minimizing an exposure dose and ensuring an efficient maneuverability.

Allowable Subject Matter

8. Claims 4, 5, 9 and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is an Examiner's statement of reasons for allowance.

The prior art of record fails to teach or suggest, calculation of said sag based upon the following model: a support element of length S is extended beyond its base by an extension a , the remainder of said support element, which is the supported part of the support element, is of length L ; the distance of said imaged slice from supported edge of the support element is Z ; said support element is assumed to be of uniform deformation constant EJ dependent on the material and geometry of the supporting element; the load distribution of the support element with the subject is effectively approximated by an linearly equally distributed weight q along the length of said support element; in combination into other elements and features of claim 26.

Other prior art cited

10. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

U. S. Patent (U S 6,128,522) to Acker et al is cited for MRI-guided

Art Unit: 2625

therapeutic unit and methods.

U.S. Patent (U S 6,341,152 B1) to Sugihara is cited for X-ray computerized tomography apparatus.

U S. Patent (U S 4,894,855) to Kresse is cited for X-ray diagnostics system having suspended position adjustable compensents.

Contact Information

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ABOLFAZL TABATABAI whose telephone number is (703) 306-5917.

The examiner can normally be reached on Monday through Friday from 9:30 a.m. to 7:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Mehta Bhavesh M, can be reached at (703) 308-5246.

Any response to this action should be mailed to:

Assistant Commissioner for Patents
Washington, D.C. 20231

Or faxed to:

(703) 872-9306 (for *formal* communications; please mark
"EXPEDITED PROCEDURE")

Hand delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA. Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 305-4750

Art Unit: 2625

Abolfazl Tabatabai

Patent Examiner

Group Art Unit 2625

June 27, 2004

A handwritten signature in black ink, appearing to read 'Bhavesh M. Mehta', with a stylized, cursive script.

**BHAVESH M. MEHTA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800**